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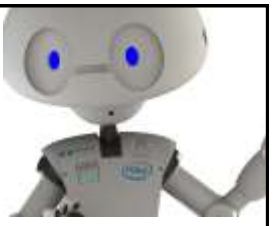

www.creative-science.org

http://linkd.in/1xUMdJD

https://twitter.com/CSciFoundation

Turning Science-Fiction Into Science-Fact

Prof Victor Callaghan

vic@essex.ac.uk

http://victor.callaghan.info

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Overview of Talk

*"This talk seeks to introduce **science-fiction prototyping** as a methodology for inspiring, capturing and communicating innovations for scientific, business and societal innovations".*

- Section 1 – Ideas
- Section 2 – The Intel Story
- Section 2 – about SFPs
- Section 4 – Summary

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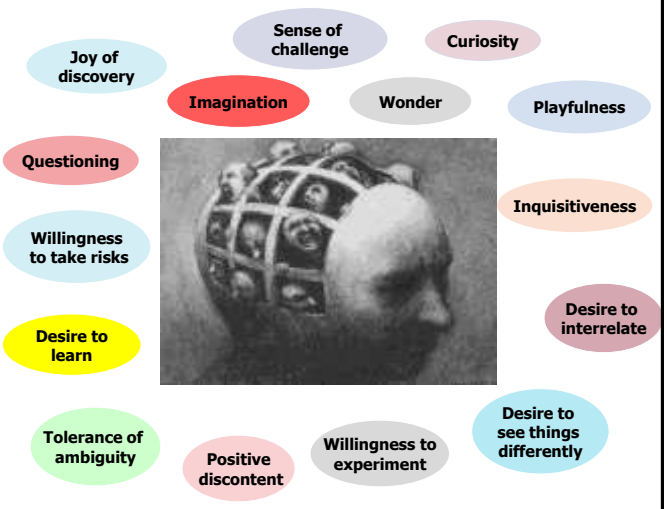
Where do new ideas come from?

- How do we get ideas
- Where do they come from?
- How do we communicate ideas?
- Is there anything we can do to help us get ideas
- Ideas are important as they help us:
  - Solve problems
  - Create new products
  - etc
- Good ideas are worth a lot of money!



Drawing by Paul Rumsey
(www.paulrumsey.co.uk/)

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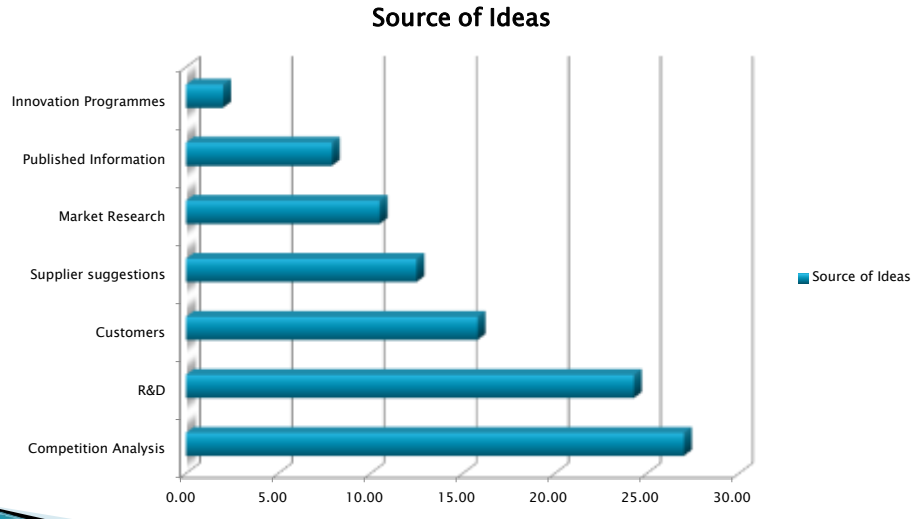
Where Do Businesses Get New Product Ideas?



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The intel Story

Image from drawing by Paul Rumsey

- Intel's 'chip life cycles' occupy about 7-10 years from concept to shipping (and maybe another 15 years of product life)!
- How can they specify chips for worlds that don't exist yet?
  - Maybe use techniques on previous slide?
  - But, they wanted to be smarter, get better ideas than their competitors!
- The main Intel resource is engineers (but traditional engineering education encourages structured & incremental thought!)

- Intel decided the magic ingredient was **imagination**
- **The Intel solution** was to ask their engineers to write fictional stories about the technologies they are working on, to inject **imaginative leaps** in their thinking!

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CSF www.creative-science.org

see more detail on http://victor.callaghan.info/history/csf/ 5

Science Fiction Prototyping

intel

- Science + Imagination = Creative Science
- Method uses peoples imagination to write short fictional stories about the future (in Intel's case based on technology the engineers are working on).
- Written as credible description of a possible life
- = a **SF-Prototype** (that can test ideas).
- Everyone understands a story so its perfect for communication between different types of people
- Outcomes of SFPs are used to create new kinds of products, businesses, social structures etc

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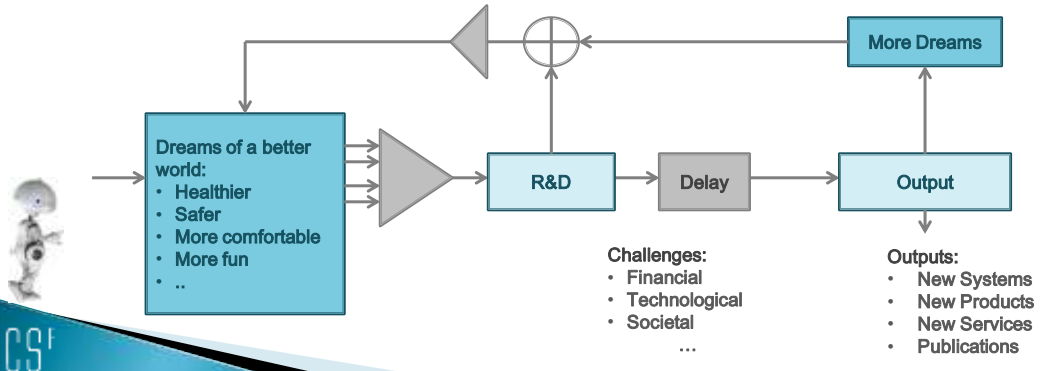
The Creative Science Cycle

*In the beginning we **dream of a better world**. We may want the world to be **healthier** –(eg wearable technology), safer (eg intelligent vehicles), **more comfortable (eg** smart homes) or **more fun** (eg interactive games).*

*These **dreams** come together (integrator symbol) and feed the research. Research produces outputs but with delay due to the technological or financial challenges. There are two types of outputs; tangible outputs such as products / publications or abstractions (more dreams because we will never be satisfied with what we have!).*

*New **dreams**, as the research outputs, feed our old dreams but this time they may need some amplification because according to our research results, we may end up thinking that something is not achievable. So the "Creative Science Cycle" goes on.*



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Source: Erkan Bostanci, August 2011

Intel / CSF Video From CS'11

- SFP uses short stories about the future to inject imaginative leaps and provide a shared language for innovation

VIDEO INTRODUCING SCIENCE FICTION PROTOTYPING

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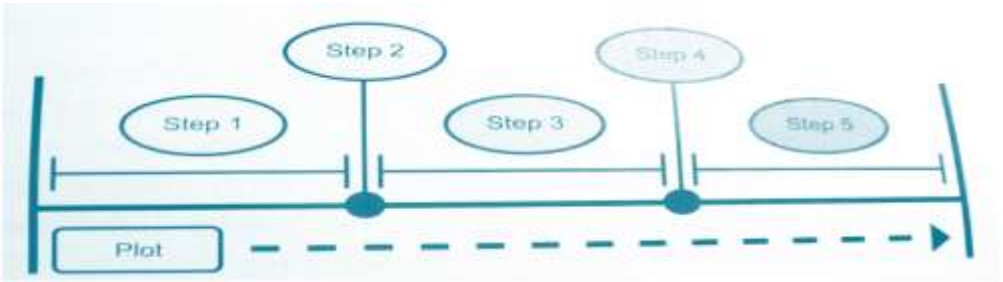
Johnson's 5 Steps for Writing SFPs



Step 1: Pick Your Science and Build Your World
Step 2: Identify the Scientific Inflection Point
Step 3: Consider ramifications of the Science on People
Step 4: Identify the Human Inflection Point
Step 5: Reflect on what Did We Learn?

http://www.amazon.com/Science-Fiction-Prototyping-Designing-Future/dp/1608456552

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Regular SF-Prototype Structure

- **Typical size** -10-12 pages for full SFPs (or 4-6 pages for short SFPs).
- **Structure**
  - Introduction (half a page)
  - Background work (1-2 pages) discusses your work and how it relates to story (including any references).
  - Fictional Story (9-10 pages) that illustrates describes and tests (exercises) your vision of the technology and usage.
  - Short summary (half to one page, say) that provides an overall comment (reflection).
  - References should be included at the end of the paper.
  - For short SFPs, they would be pro-rata smaller mirrors of the above.

Some Examples: http://dces.essex.ac.uk/Research/iieg/CS2011.htm

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The Past (some earlier ideas!)
(Future Facts: a 1976 book of extrapolations)

- 300 examples of existing work that are extrapolated forward 25 years
- **People Washer Egg** (Sanyo Electric Co) – fifteen minute cycle of warm shower warm shower, ultrasonic washing, whirl water cleaning with small rubber balls to massage skin and muscles & hot air drying – what went wrong!
- **Telenet** – data communication system, used by Pentagon's Advanced Research Projects Agency (ARPA) to link 18 cities – became the Internet!
- **System 80 Learning Machine** (Borg-Warner) – acts like private tutor (two feet square, console containing a record player, screen, row of buttons, and memory bank) – became eLearning!

Unlike SFP, this book didn't test these ideas

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Example SFP – The 21st Century Robot

- The first SFP, "*Nebulous Mechanisms*", written by Brian Johnson & presented at IE'09 in Barcelona based on science-fact paper (*Using Multiple Personas in Service Robots to Improve Exploration Strategies When Mapping New Environments*" by Egerton, Callaghan, Clarke).
- About a robot called Jimmy, and the issues that arose through mimicking the irrational aspects of humans in robots (based on experience of my then PhD student (Simon) who went to Malaysia following a girl he loved and the heartbreak that followed!

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Example SFP – The 21st Century Robot






- The Prototyping activity moved "*Jimmy*" (from the "*Nebulous Mechanisms*" SFP) from narratives into real life.
- Intel set up a crowd sourced innovation project to engage the public in designing the domestic robot of the future.
- Software (Apps) & Skins design files open source (free).
- Ongoing experiment to assess value of SFP & open innovation for product innovation.

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http://www.21stcenturyrobot.com/
http://www.trossenrobotics.com/HR-OS1

Example SFP – Tales from a pod

New Commercial Product

ImmersaVU http://www.immersivedisplay.co.uk/immersavu.php

Based 2010 SFP about education in 2048*

SFP's are short stories that describe future products and contexts

iPods were effectively small cocoons; something like a comfortable armchair enclosed within a sound-proof egg-like structure packed with sophisticated but largely invisible technology that included immersive mixed reality and sophisticated AI. When participating in a movie (the industry had long dropped the word "watching" which describing these new immersive movies) the immersive reality technology aimed to make the participant feel as though they were truly part of a fictional physical world.

http://dces.essex.ac.uk/Research/iieg/papers/TalesFromAPod(Paper).pdf

* The authors are fans of the Chinese film director Wong Kar-Wai

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Example SFP – Tales from a pod

The Real Product

immersaVu

http://www.immersivedisplay.co.uk/

The SF–Prototype Specification

Additive Technology ePod-4

In this increasingly competitive world, where knowledge determines success, your child deserves the very best education available and that is Addictive Technology's **ePod-4**

Pioneering research by Benjamin S. Bloom in the 1980s (and supported by all work since) proved that students who receive one-on-one tuition learn at least an order of magnitude better than grouped students. If you want to give your child the best one-to-one education in the world, give them an Addictive Technology's **ePod-4**

Education:

- Super-Intelligent Artificial Teachers
- Personalised one-to-one tuition (the gold standard)
- Teacher's avatar has visualisation powers that don't exist in physical space
- Available 24 hours a day, 365 days a year
- Learning environment (avatar, surroundings, lessons) can be tailored for each student
- Unwavering attention and happy disposition
- Compelling content combined with contextual delivery
- Teachers available in different cultures, ages, sexes and form

Technology

- Free-Will 3 © - Quantum processor (upgradable)
- My-Mind 1.2 © - Evolving Persona Engine (customizable)
- Flame 5 © - EmotionWare
- Get Real 8.2 © - Mixed Reality Cocoon
- Real-Touch © iSkin & Haptics
- Ghost 4.1 © – 3D Imaging & Audio
- SentiNet © - Knowledge Engine

Addictive Technology, Zizhu Science Park, No. 880 Zi Xing Road, Minhang, Shanghai 200241, China

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Example SFP – Tales from a pod

- The production version of the ImmersaVU used in blended reality research

VIDEO SHOWING MIXED_REALITY DEMONSTRATION OF REALISATION OF TALES OF THE POD SFP

www.FortiTo.com

http://www.immersivedisplay.co.uk/immersavu.php

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SFP For Non-Science (the Fashion Industry)

- Ping Zheng's (Canterbury Christ Church University) use of existing fiction and non-science innovations
- Sunfed Fashion – top selling professional women's fashion-wear, in China
- Quote from the President of Sunfed Fashion "*Science fiction works are our never-ending source of new ideas to keep up with customers' demand… the ability to identify and generalise ideas from science fiction is critical as not all SFP works but you need to know what customers expect and what can be used to transform these 'fictional imaginations' into a tangible product.*"


Harry Potter – Cape Coat


Frankenstein – the monster's long coat

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Summary

- SFPs provide a tool to capture, test communicate ideas about the future.
- Ideas can come from existing research, fiction or from peoples' imagination!
- Outcomes can be new services, products, businesses or socio-political structures.
- **Update:** CSF is collaborating with Tsinghua University Press & Chinese academics exploring the use of SFP for teaching technical English.

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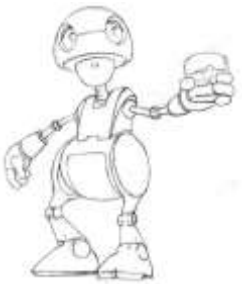
That's it !

*"**How do we change the future?***
Change the story people tell themselves about the future they will live in"
Brian Johnson

"We are what we pretend to be, so we must be careful what we pretend to be?"
Kurt Vonnegut



"The real source of wealth and capital in this new era is not material things.. it is the human mind, the human spirit, the human imagination, and our faith in the future" Steve Forbes.

"It's really hard to design products by focus groups. A lot of times, people don't know what they want until you show it to them." Steve Jobs

http://victor.callaghan.info